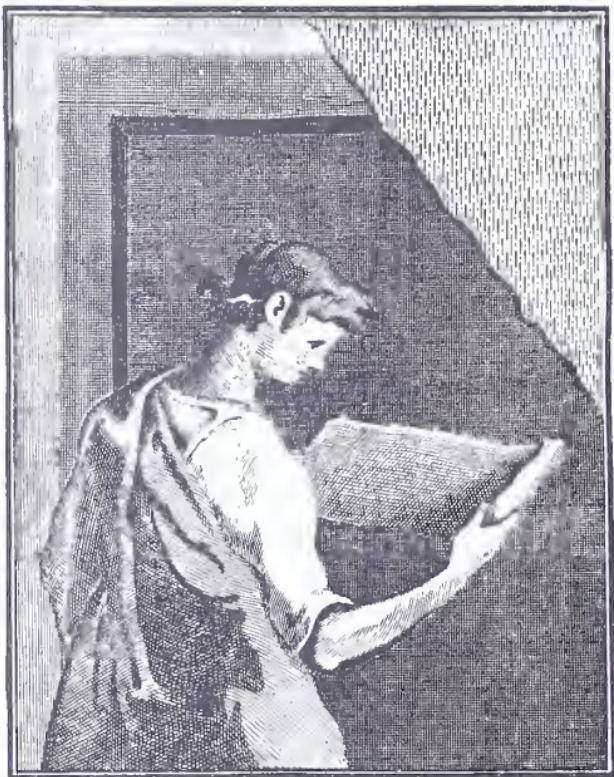


PERMANENT PICTURES

MAXIMILIAN TOCH

**D. VAN NOSTRAND COMPANY
NEW YORK**



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HOW TO PAINT
PERMANENT PICTURES

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HOW TO PAINT PERMANENT PICTURES

BY
MAXIMILIAN TOCH

PROFESSOR OF INDUSTRIAL CHEMISTRY, COOPER UNION;
MEMBER OF THE FIRM OF TOCH BROTHERS; AUTHOR
OF CHEMISTRY AND TECHNOLOGY OF PAINTS;
MATERIALS FOR PERMANENT PAINTING,
ETC., ETC.



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PREFACE

THE observant visitor to the great art galleries is astonished and pained to see the large number of pictures of the highest artistic excellence gradually being ruined on account of decomposition as shown by fading, darkening, cracking and peeling of the paint films. This is all the more deplorable because the cause of the deterioration is well known and pigments, vehicles, canvas, in fact all the materials needed by the painter to make absolutely permanent paintings are equally well known and require only intelligent choice and use by the artist.

The author has attempted to give this information in this volume which is intended to be a popular common sense treatise for all artistic painters who desire to produce perma-

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ment pictures which might otherwise in a few short years show most glaring defects.

The author believes that manufacturers of artists' material should be compelled by law to label every tube of paint as to its permanence and chemical composition so that artists could be assured that they were getting what the label indicated.

I acknowledge with great gratitude the valuable assistance of Prof. Carel F. L. DeWild in reviewing this manuscript, and for the excellent suggestions he has given me.

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How To Paint Permanent Pictures

INTRODUCTION

IT is astonishing that, in these days of progress, no corresponding advance has been made in practical instruction in the composition of pigments, mediums and all material necessary to the production of permanent works of art, whether they are easel paintings, or water colors for the adornment of the home or public places, or in tempera and fresco for decorations.

There is not, to my knowledge, a regular course of lectures on this subject at any of the Art Schools in England, Italy, France or America, in which students are taught what materials to use and what to avoid.

During an experience of more than thirty years in the manufacture of pigments and mediums for all types of painting, I have investigated the methods, analyzed the material and demonstrated the folly of most of the procedures in common use to-day, and feel that there is a demand for a little book of this kind, which painters can use, and from which art students can acquire a sane method of producing permanent results.

If the painter once knows, either mechanically or unconsciously, the pigments that are absolutely permanent, and the principle involved in producing paintings which will not crack, fade, darken, peel, blister or decompose, his or her mind can be taken up completely with the artistic effect to be produced, without thinking for a moment of either the mechanical or the scientific side of the question, and without his or her artistic feeling being dis-

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turbed during the process of painting. It is quite natural that a man in my position, who has met many painters and who has discoursed with them on this subject, has had many of them confess time and again that the practical and technical side of painting has always disturbed their peace of mind whenever they have been in the midst of serious work.

And so, the object of this book is to convey to the painter, in simple language, and without going into any abstruse science of any kind, the reasons why certain materials should be used and certain materials should be avoided. I wrote a book which went into the subject of all the pigments and all the mediums in a more scientific manner * and in that book I gave what is regarded as the simple permanent palette. But it is obviously essential that a

* *Materials for Permanent Painting*, by Maximilian Toch, published by D. Van Nostrand Company (1911), New York.

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more complete and practical dissertation on this subject will be of benefit to those who have selected artistic painting as their life work. I have heard, time and again, the statement that we do not know in this age how to make the materials which the older and great masters used. It has been dinned in my ears frequently that our materials are so worthless that uniform and permanent results cannot be obtained. Nothing is further from the truth, and all one has to do is to see the enormous amount of permanent painting that exists outside of the artistic field to realize that the science of paint making is more perfect to-day than it ever has been.

The manufacturers of ordinary house paints in the United States all, more or less, guarantee, within reasonable limits, that the paints which are applied to the exterior of buildings will last five years. I have a case in mind where

four huge smokestacks were painted, near the seashore, and at the end of ten years the paint was still in perfectly good condition. I ask anyone who reads this, and who is an artistic painter, how long does he or she think an artistic painting would stand, exposed to the sea air, to the sun, rain, frost and winds? The chances are that no artistic painting, executed with the same thickness of coating as structural paint, would last three months. This is fair evidence of the fact that structural paint, which is really simple paint, contains the inherent quality of permanence, for reasons which I will explain later. Take the case of entrance doors in France, England and the United States, which are painted and varnished and exposed to the elements, and see how perfectly these stand for several years. It is on this principle that artistic painting must be based for absolute permanence, for artistic painting is never

subjected to the elements and is never subjected to the extremes of temperature which menace the longevity of house or automobile painting. In fact, there is no reason why a painting on the interior of any building, or suitably framed or covered in any gallery, with reasonable care should not last for an unlimited time. I have seen the fresco decorations in Italy, which are as good to-day, so far as I know, as the day they were applied. Many of the primitive Italian paintings are simply remarkable for their permanence, even though the wooden panels on which they were painted are worm-eaten and rotted; and I have seen any number of paintings executed within my time by prominent painters that have cracked, faded and deteriorated because wrong materials were applied and insufficient care was exercised in the application and proper sequence of the pigments and mediums employed.

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There are not more than fifteen pigments necessary for the painting of a work of art; and, out of these fifteen, nine or ten are sufficient for every purpose. To show the folly of so many colors, you can pick up any catalogue and find the following Green Pigments:

Chrome Green, Nos. 1, 2, and 3, which means Light, Medium and Dark.

Cinnabar Green, Pale and Light.

Olive Green, Medium and Deep.

Emerald Green.

Prussian Green.

Malachite Green.

Oxide of Chromium.

Oxide of Chromium, Transparent.

Virdian Green.

Cobalt Green.

Emeraude Green.

Emerald Oxide of Chromium.

Ultramarine Green.

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French Veronese Green.

Green Lake.

Permanent Green, Light, Medium and Deep.

Zinnober Green, Light, Medium and Deep.

Alizarin Green.

Paris Green.

Sap Green.

Venetian Green.

Copper Green.

One German manufacturer of considerable reputation mentions seventy-nine varieties of Green; one hundred and twenty-three varieties of Yellow; one hundred and seventy-nine of Red; seventy-five of Brown; seventy-nine of Blue; thirty-two of Black and twelve of White. There is absolutely no license for the manufacture of such an enormous variety of pigments, when, at most a dozen will do.

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All in all, one German catalogue contains five hundred and seventy-nine varieties of colors.

In addition to these, there are probably a number of others that are sold under proprietary names, and I ask any painter who has the slightest skill, whether it is necessary to have more than one or two Greens to produce any and every shade that he may desire. If he is a painter of any skill, there is no need for him to have all of these Greens, some of which are good — most of which are fugitive. In addition to the one or two Greens which he may have on his palette, various mixtures of Yellow and Blue give various tones and shades of Green. I have singled out Green as an example of the multiplicity of colors that exists.

The same repetition and duplication of pigments will be found under the Yellows, Reds, Blues and Blacks.

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As far as Whites are concerned, there are a large number of proprietary Whites; and, in addition, there are Silver White, Zinc White, Flake White, White Lead, Permanent White, &c.; whereas, the only two necessary on the painter's palette are Zinc White and Flake White (White Lead), and perhaps, occasionally, Permanent White (*Blanc Fixe*).

The more colors that are presented to the painter, the more embarrassed he will become as to which he really ought to use. Painters make the one serious mistake of attempting to get immediate results. It was told of Sir Joshua Reynolds that he would not use permanent Vermilion in order to obtain flesh tints; for, he said he wanted certain warm tones produced by mixtures of Lakes and other pigments, so that when his pictures were finished they would be pleasing to him. The results showed that even during his lifetime they were dis-

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pleasing to his patrons, and particularly to him, but yet he would not learn the lesson that the multiplicity of the application of pigments involved.

It is very unfortunate that the artificial coal tar dyes are so beautifully brilliant and give such immediately enticing results. It is equally unfortunate that when these artificial colors are exposed to our civilized atmosphere, which contains chemical substance due to the gases of cooking and of manufacture, many of these pigments are attacked. They tone down, and not only do they oftentimes lose their brilliancy, but frequently they lose the characteristic shades for which they were employed. Then, again, sunlight, as we all know, has a deleterious effect on all of the organic pigments, and darkness has an equally deleterious effect on many of the varnishes and all the drying oils.

HOW TO PAINT PERMANENT PICTURES

Sir Joshua Reynolds must have glazed his portraits with a great variety of Lakes, including Madder; and, where he used vegetable Lakes and Carmine as a glaze, the faces have assumed, in time, a ghost-like appearance.

THE SIMPLE PALETTE

THE average painter can get along perfectly with ten colors. In fact, the skilful artist can paint practically any picture he wants with Red, Yellow, Blue, Black and White. The Red, in this instance, would be a bright iron oxide, sold under the name of Venetian Red or Light Indian Red. The Yellow would be Medium Cadmium. The Blue would be Ultramarine Blue. The Black would be Lamp Black. The White would be Zinc White.

But, in order to work no hardship on the painter, ten colors are all that are needed for the average work. These ten can be intermixed, with the exception of Madder Lake, will not fade, will not react upon each other, nor will they interfere with the drying of each other. Following is the Palette with which an

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average painter can get along perfectly and from which no bad results are ever obtained:

Lamp Black.

Zinc White.

Bright Red Iron Oxide.

Raw Sienna or Yellow Ochre.

Burnt Umber.

Chromium Oxide, Opaque.

Chromium Oxide, Transparent.

Ultramarine Blue, or Cobalt Blue.

Cadmium Yellow.

Madder Lake.

Madder Lake must not be mixed with any pigment containing the Yellow Oxide of Iron, like Ochre or Raw Sienna. It is wise, if it can be helped, not to mix it with any other pigment, but to use it as a glazing color. Yet, there is no harm in mixing Madder Lake with Lamp Black or bright Red Oxide of Iron, or Cadmium Yellow.

THE COMPLEX PALETTE

THE following are colors which may be mixed with each other without producing any deleterious effect or without undergoing any change; excepting Madder Lake, as mentioned on the previous page.

Lamp Black.

Ivory Black.

Bone Black.

Graphite.

Zinc White.

Permanent White.

Bright Red Oxide.

Venetian Red.

Indian Red.

Burnt Sienna.

Raw Sienna.

Yellow Ochre.

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Burnt Umber.

Roman Ochre.

French Ochre.

Oxford Ochre.

Chromium Oxide, Opaque.

Chromium Oxide, Transparent.

Ultramarine Blue, Natural or Artificial.

Cobalt Blue, Natural or Artificial.

Cadmium Yellow, all shades.

English Vermilion; or any Vermilion made
of Mercury.

Madder Lake or Alizarin Lake.

With the exception of the Madder and Alizarin * Lakes, all the other colors can be mixed with each other without any danger of decomposition, and Madder Lake can be mixed with most of these colors, with the exception of the following:

* Madder Lake and Alizarin Lake are the same, excepting in name.

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Yellow Ochre.

Raw Sienna.

Transparent Chromium Oxide.

For diluting, Madder Lake, Permanent White (Blanc Fixe) may be used.

}

COMMERCIAL PAINTING

If you take up any art dealer's catalogue, you will find more than a hundred varieties of colors; and, among them, the vast majority should not be used by the average painter. But, there is a legitimate use for them in commercial painting. In sketching, for advertising purposes or for book illustration, brilliant colors are permissible, where half-tone reproductions are desired; and, under the circumstances, it would be well for the painter to know exactly what he is using. The average painter does not know that Cremnitz White, Flake White and White Lead are identical in composition. Nor, does he know that Silver White and Zinc White are the same. In many of the States of the United States, laws have been enacted which compel manufacturers of house paints to label

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each container as to its true composition. If a man is buying a ready-mixed paint and is supposed to be getting a mixture of Zinc Oxide, White Lead, Linseed Oil and Drier, the label must so state, and I have advocated for a long time that artists' tube colors ought to be labeled as to their true composition.

A color, for instance, like Zinnober Green, which is purely and simply a name that trades on the reputation of Zinnober Red,* should be labeled as to composition. This is a mixture of Prussian Blue, Chrome Yellow and White, and is only permanent when used alone on surfaces, excepting plaster or Portland Cement concrete. The painter would then know what to use and what to avoid. It must be understood that I am not condemning the manufacture of the brilliant aniline tube colors entirely, because there is some legiti-

* Zinnober is German for Vermilion.

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mate use for them; but, it is my object to attempt to educate the painter in a simple Palette, so that he may be sure of the lasting qualities of his art.

PALETTE KNIVES

PAINTERS should adopt horn palette knives instead of steel palette knives.

To illustrate the reason for this — if Naples Yellow be taken and smoothed out with a steel knife, the Naples Yellow turns Brown and Black in streaks, because there is a chemical action between the steel and the chemical composition of the Naples Yellow. This is true of many colors; and where painters are inclined to do some painting with knives instead of brushes, it is preferable to use a horn or hard rubber knife, because no decomposition can possibly take place.

BITUMEN

BITUMEN and its homologues, such as Vandyke Brown, Cassel Brown and Asphaltum, should, under no circumstances, be used by any artistic painter. If you will look up the literature of photography before the days of the daguerreotype, photographs were taken on Bitumen, because it was so sensitive to the light that within a day a negative or positive imprint could be obtained by coating a sheet of silver or glass with a Bitumen solution. Where the light acted on the Bitumen it became Black and insoluble, and where the light did not strike it, it remained Brown and soluble. More damage has been done to artistic painters by the use of Bituminous pigments than by any other.

Dupré and Jacque, of the Barbizon School, are two examples af painters whose work

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deteriorated through the use of Bitumen. It may be true that a pleasing effect is obtained when Bitumen is employed as a glazing material, but in time the picture darkens, and restoration is impossible — first, because of the solubility of certain parts of the Bitumen that have not been acted upon by light; and second, because any attempt to remove the part that has turned Black destroys the original painting.

Vandyke Brown and Cassel Brown contain Bituminous materials, and Asphaltum is the same thing as Bitumen.

TEMPERA COLORS

TEMPERA Colors, or Tempera Painting, existed long before Oil Colors were known, and Tempera Medium was used five thousand years ago by the Egyptians in their painting. Egyptian coffins and sarcophagi were painted with both glue size and egg tempera. It is well known that the Egyptians manufactured very excellent grades of glue either by boiling parchment or bones and hides of animals. They were excellent cabinet makers and used glue very largely in joining pieces of wood. In the great museum at Cairo there are to-day many samples of furniture glued together with Egyptian glue, which are still in excellent condition. It is, however, more than likely that little or no binder was used when the pigments were applied on the various tombs or temples, even

to those built about 1500 years later, like the Temple of Karnak. We all know that the climate of Egypt is exceedingly dry and therefore no rain can wash off or disintegrate a cold water paint made by means of pigment and glue. The Nile clay and Nile mud largely used in building are slightly alkaline and in many respects similar to the adobe mud in New Mexico and Arizona. This mud contains a small percentage of free lime, and any earthy substance which contains free lime will in time act like a weak cement and become firmly bound. It is therefore my opinion that many of the decorations made by the Egyptians were made without any binder other than the lime naturally found in the soil, and in a few cases the glue was used. I also judge, from the nature of the implements used, that the pigments were rubbed into the surface and they in time became part of the surface.

I do not refer to the splendid decorative work on the wooden sarcophagi when I say little or no binder was used, for in these coffins and on the outside of the linen wrappings there are some really wonderful decorative paintings in which binders were used. The portraits outside of the mummy wrappings in the second century were done with wax and resins and are excellent works of art.

The primitive Italians were past-masters at the art of making Tempera Medium, as evidenced by their paintings still in existence, a large number of which are in absolutely perfect condition.

Tempera Medium, generally speaking, is a mixture of either the whole egg — or, more correctly speaking, the white of the egg — and a small quantity of drying oil and water. When the white of the egg is beaten up with linseed oil or poppy oil, it forms a very weak

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emulsion or soap, from a chemical standpoint. This is really nothing more or less than a solution of flexible adhesive, or glue. Tempera Medium is also made from Casein, which is an adhesive element held in solution in milk. This is separated from the milk, chemically, and dried, dissolved in weak ammonia water, and mixed with linseed oil. In other words, Tempera Medium is a Water Color Medium, to which a little drying oil, or other adhesive, has been added. On account of the weakness of the binder and the large quantity of water contained, which entirely evaporates, the color is left absolutely flat and without the slightest sign of gloss, unless piled on too thickly. After this has been allowed to dry for a few days, it may be varnished with a number of varnishes, which I will describe later on, when it has all the appearance of an oil painting. There are such a large number of tempera

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tube colors made that it is unnecessary for the artist to make his own. Tempera Colors do not change, excepting, of course, those which are inherently defective, and it is unfortunate that in looking over the list of Tempera Colors for sale, Aniline Lakes should be manufactured and sold at all. Colors, however, which really have inherent defects, like Flake White, Chrome Yellow and Paris or Emerald Green (which turns Black and Brown when submitted to sulphur fumes of the atmosphere) remain absolutely permanent as soon as they are varnished. Tempera Medium made with the whole egg contains a very large percentage of sulphur, and for this purpose the Tempera Medium, when pigments like Chrome Yellow, Flake White and Paris Green are used, should be replaced by a Tempera Medium made of White of Egg and Oil, or Casein and Ammonia. The Ammonia, it must be understood,

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plays no role, since it is only used as a solvent for the Casein, and during the process of cooking or boiling is driven off, so that a boiled Casein emulsion of Linseed Oil has no effect on any color. The white of the egg contains a very little oil, while the yolk of the egg contains as high as twenty per cent. of fat or oil, thus adding to the flexibility of the medium. But, since the yolk of the egg ranges from a light Yellow to an Orange, it can be readily seen that it is not suitable for the manufacture of white or light shades of Tempera Colors.

Cennini recommends, alternately, the yolk and the white, depending upon the purpose, mixed with the juice of figs. This, evidently, must refer to the sap of the fig tree; for, it is well known that rubber is obtained from the fig tree. A slight incision in any fig or rubber

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plant gives a milky excrescence, which has considerable adhesive power, and which contains about half rubber and half water, in the form of an emulsion. The yolk of the egg was, however, mostly used for fresco, panel and metal.

Dry white of egg may be bought as a commercial article, as eggs are gathered for this purpose in large quantities in China. This may be dissolved in a weak alkaline solution, and of course this solution must be made in the cold, the alkali, if it be ammonia, being allowed to evaporate at room temperature, even after the oil is added. Otherwise, as anyone knows, the boiling of any white of egg solution, coagulates it, leaving hard boiled white of egg as the result. The ideal Tempera solution for manufacturers to use would, therefore, be Casein, to which the requisite

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amount of oil should be added — or, white of egg and a drying oil.

Unless a preservative be added to a Tempera emulsion, it will rot and decompose in a very short time. For this purpose there are many preservatives. Oil of Cloves has been used from the time of the Egyptians. In fact, boiling or mixing with spices has been regarded as the natural disinfectant and preservative. Modern chemistry, however, teaches us that materials like Benzoate of Soda, Salicylic Acid, Boric Acid and Carbolic Acid are the best preservatives, although if insufficient amounts are added, the Tube Colors will decompose in time. If Tempera Colors are used in the place of Water Colors for painting on paper, care must be exercised that the colors are applied very thinly; for, if the slightest attempt at impasto is tried, the colors will crack, and in many instances fall off after they

have thoroughly dried out. The binder in Tempera Colors is really so weak that it will not support by gravity a large quantity of pigment. Therefore, thin painting in Tempera, especially on paper, is always essential.

The Permanent Palette for Tempera Colors is the same as that for Oil Colors. If no interaction between Tempera Colors takes place while they are in the process of drying, there can be no reaction that will ever take place after they are once dried, since dry chemicals do not react. Hence, after Tempera Colors are varnished, they may be regarded, if permanent to light, to be permanent forever. There comes, then, the question which has been mooted so often among artistic painters—Why varnish a Tempera painting at all, since the idea is to produce the flat effect? — to which the answer must be made that a painting, no matter of what it is made, unless hermeti-

cally sealed, either in a glass covered frame or with varnish, or both, is bound to be acted upon by our modern indoor atmosphere, and varnishes can be made, and are made, which dry with an absolutely Matte finish, so that these may be used with perfect success over a Tempera picture.

There are several types of Tempera Colors on the market. Strictly speaking, a Tempera Color should be a mixture of Albumen, made either of dried or fresh white of eggs, linseed oil and water beaten up into an emulsion. It is not generally known among the laity that all vegetable oils, whether they be drying or non-drying, will make an emulsion with lime water or any other alkali, but lime water is probably the best emulsifying agent to use. This medium, when mixed and ground with dry colors, forms the well-known Tempera, similar in all respects, to that used by the primitive

Italians. One has only to see the remarkable permanence of the early Italian Tempera painting to conclude beyond peradventure that this medium must be regarded as one of the most permanent in existence.

There are further types of Tempera Colors on the market which contain little or no albuminous material, but which are simply mixtures of linseed oil and water. I am refraining from discussing scientifically the manufacture of emulsion paints, because that has been described fully and at great length in another publication.* So that, for the present, it is only necessary to say that it is a simple matter to combine oil and water for Tempera painting. There are paints on the market sold under the name of Matte Colors and Tempera Colors, which are emulsions of linseed oil and water

* *Chemistry and Technology of Paints*, Maximilian Toch. D. Van Nostrand Company (1916); pp. 254-259.

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only. But, these have neither the plasticity nor the smoothness of film, after they are dry, of the Tempera Colors which contain albumen. If the artistic painter will use only those pigments previously described which are permanent, whether they be ground in Linseed Oil or whether they be Tempera Colors, and a medium so prepared that noxious gases cannot penetrate through either side, absolutely permanent results will be obtained.

WATER COLORS

WATER Colors are either put up in little cakes, in pans or in tubes. In every instance, they are ground very finely in a watery Medium to which some glutinant material has been added, such as Gum Arabic; and, in the case of tube colors and pan colors, Glycerine, sugar or Glucose, to prevent them from hardening or drying out entirely. Water Colors, excepting those of the Tempera type, which contain oil, cannot be varnished, but they are "fixed" with a solution of gum or Casein, so that they do not rub off or drop off of their own weight. There are entirely too many unstable Water Colors made. Some manufacturers carry as many as one hundred and forty different pigments in cakes, pans and tubes.

A generation ago some artists fixed their

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water colors by means of Gum Arabic. In some cases the gum shriveled up and became opaque. Water colors should, of course, never be varnished, but may be fixed, if necessary with a very weak casein solution.

The perfect and simple palette of Water Colors is practically the same as that of Oil Colors, with a few additions, as follows:

Zinc White.

Constant White.*

Lamp Black.

Yellow Ochre.

Raw Sienna.

Raw Umber.

Burnt Sienna.

Cadmium.

* Constant White is also sold under the name of *Permanent White*, or *Blanc Fixe*. It has very little hiding power when wet, but dries out perfectly opaque. It also possesses very little staining power, by which is meant that a very small quantity of some other tint will change its character much more readily than it will Zinc White.

Burnt Umber.

Indian Red.

Venetian Red.

Ultramarine Blue.

Cobalt Blue.

Chrome Green, Opaque.

Chrome Green, Transparent (Emerald Oxide of Chromium).

Vermilion.

Madder Lake.

A Water Color painting must be hermetically sealed in the frame and it must not be backed up with a thin Veneer of wood, for time and again these wood veneers contain knots which are very resinous, and these resins, in a warm room, will evaporate, strike through and form a yellow spot or ring on the painting itself. The best way to frame or hermetically seal a water Color, in order to make it permanent, is to have a glass front and the glass

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should be fastened around the inner edge of the frame by means of a strip of adhesive paper to exclude air and moisture. The Water Color is then inserted and backed up with a piece of cardboard, academy-board or thin metal, such as Zinc, Aluminum, or even Sheet Iron. When this has been thoroughly fastened by means of brads or nails, the entire back of the picture is then sealed with heavy paper which has been thoroughly soaked on both sides with a good glue or starch size. In this manner a Water Color will remain permanent. A strip of wood, a quarter of an inch thick, should be inserted between glass and drawing, so as to prevent the paper from resting against the glass. Water Color pigments may be mixed with each other without danger of reaction, because, once they are dry, no further reaction will take place, as dry colors do not interact. An exception, of course, must be

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made in the case of Flake White and Ultra-marine Blue, although Flake White as a Water Color is totally unnecessary. The question of the hiding power of Flake White as compared with other colors, will be mentioned later. But, a good coating of fixative, whether it be composed of a glue size or a Casein size, or even an alcohol varnish, is essential in the protection of Water Colors from atmospheric effects.

*Colors Which Are Absolutely Permanent
Which Are Not Generally Used And Which
May Be Mixed With Any Other Color Without
Decomposition—Not Mentioned in the Simple
Palette.*

Black Lead.

Graphite.

Alumina.

Blanc Fixe.*

* Permanent White.

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Charcoal Black.
Charcoal Gray.
Mineral Gray.*
Ultramarine Ash.†
Ultramarine Green.
Ultramarine Violet.
Ultramarine Red.

*Colors Which May Be Used Alone And
Which Are Perfectly Permanent After They
Are Varnished.*

Flake White.

Chrome Green — Light, Medium and
Dark.‡

Chrome Yellow — Light, Medium and
Orange.

Prussian Blue.

* *Lapis Lazuli.*

† *Lapis Lazuli.*

‡ *The Chrome Green* of Commerce is a mixture of
Prussian Blue and Chrome Yellow.

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Emerald Green.*

Antwerp Blue.

Naples Yellow.

Orpiment.

Chrome Red.

Indian Lake.

Genuine Alizarin Lakes of all shades.

Burnt Umber.

Madder Lakes of all shades.

Chromate of Barium.†

Chromate of Zinc.‡

Chromate of Strontium,§ (sometimes called ultramarine yellow).

* *Paris Green.*

† *Barium Yellow.*

‡ *Zinc Yellow.*

§ *Strontium Yellow.*

PERMANENT FOUNDATIONS FOR PAINTING

MANY a painting decomposes, cracks, chips and otherwise fails, because the foundation upon which it is painted is unstable. There is an enduring feature connected with oil paintings which has been described elsewhere * and it is not necessary to go into this subject in this volume; but, suffice it to say, that canvas is the least permanent of all foundations, and there is hardly any one of the paintings by the Old Masters, or even any of the paintings in existence by the Modern Masters of one hundred years ago, that has not been relined; that is to say, the canvas has been mounted on other canvas in order to give it stability and permanence.

* *Materials for Permanent Painting* (Toch) pp. 48-52.

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The principal foundations that have been used have been wood of various types, and metal. Wood really is as permanent as anything in existence, excepting that eventually it becomes either rotted, through excessive moisture, or a certain worm invades it and bores irregular holes through it. The most permanent of all foundations is metal. The Dutch have painted on copper, and where the copper has been rather smooth the paint has eventually curled or peeled. Sheets of Zinc or sheets of Aluminum are regarded to-day as the most permanent foundations for all paintings up to a certain size, but beyond a certain size canvas must necessarily be used. I have always advocated the painting of canvas on the reverse side, to prevent noxious gases from working their way through to the under side of the painting, and the painting of the reverse side of canvas is not as simple as it may seem. In

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the first place, if a painting is to be protected by painting the reverse side of the canvas, after the painting has been completed, unequal tension takes place and the painting buckles, so it is necessary under all circumstances to remove the canvas from the stretcher and re-stretch it. Then again, Linseed Oil paint must not be used either on cotton or linen direct. Linseed Oil is acid, and eventually rots or decomposes all vegetable fibre. It is for that reason that canvas is always first prepared with a glue solution, which is neutral and prevents the soaking in of the oil paint, so that if the reverse side of the canvas is to be painted, it must be either coated with a glue solution, or, what is equally good, it must receive a thin coating of Shellac Varnish. Glue solutions are made by using a double boiler, such as carpenters use, or such as housewives use for boiling rice or other cereals. A pound of glue or gelatine is

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soaked overnight in a quart of cold water. This swells the glue and makes it ready for boiling. Then it is placed over the fire in a double boiler and more water added, until it has the consistency of very thin cream. After it has been allowed to cool, it is applied to the canvas. Then, after that, any good mixed oil paint may be applied. I have, however, always recommended a mixture of such pigments which shall neither dry too hard nor too soft and will not eventually become too brittle. For this purpose, the following pigments may be mixed and may be obtained from any reputable dealer in house paints:

One pound of Red Lead in Oil.

One pound of Zinc White in Oil.

One pound of Pure White Lead in Oil.

mixed with one-half pint of Turpentine, to which one-half pint of raw Linseed Oil is

added. This makes a salmon-colored ready mixed paint which dries slowly, evenly and is very impervious, and if the color is at all objectionable and too light, Lamp Black may be added to produce a Chocolate Brown. The Lamp Black should be added in oil without the addition of any further varnish or drier. But this must, of course, be applied over the glue size heretofore mentioned, and at the end of a week the painting can be restretched and will show no corrugations or buckling.

In spite of wood being a more durable painting material than canvas, artists prefer canvas, simply on account of the difference in surface; for, the twill of the canvas gives the pigment an unevenness which causes it to reflect and refract light, much to the advantage of the painting.

Gilbert Stuart, in later life, painted many portraits on panels that were grooved to give

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the impression of canvas, and he had the surface for many of his panels prepared in such a way as to imitate the weave to which he was most accustomed.

PREPARATION OF WOOD AS A FOUNDATION FOR PAINTINGS

MAHOGANY wood, since the Twelfth Century, has been a great favorite with painters, but an Oak panel is just as good. It is absolutely necessary, however, to reinforce the reverse side of a wood panel, either by means of a cradle or by means of cleats.

Cleats are very dangerous. Pictures split and buckle alongside of cleats, and when such buckling takes place, the picture ought to be taken off and cradled.

If the wood panel is sufficiently heavy, these cleats may be screwed on, but at all events they should be glued on with a proper glue, such as can be purchased in the United States under the name of LePage's Glue, or Russia Cement;

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but, in any event, it is quite important, in addition to gluing these strips, to fasten them by means of fine wire nails which may go through to the outer surface, and then be cut off and sandpapered to a smooth finish. A very good preparation of a wood foundation is to fill the wood first with what is known as wood filler. This is a material called Silex, or Silica, mixed in a quick drying varnish. It is thinned down with Spirits of Turpentine, applied across the grain of the wood panel, and after ten or fifteen minutes it is rubbed off lightly, the fine grain of the wood becomes filled up with this Silica or wood filler; and, after twenty-four or forty-eight hours, the surface is then rubbed with very fine sandpaper, which makes it perfectly smooth. Then a thin application of Shellac Varnish is applied; and Shellac Varnish for this purpose is manufactured by taking two pounds of any Orange

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Shellac to three-quarters of a gallon of Denatured Alcohol. This should not be mixed in a metal container, but should be mixed in a stone jar or glass bottle. In a few hours it will have dissolved, if shaken occasionally. A coat of this is applied to the wood after the fill has become thoroughly dry. Three hours afterwards it should again be lightly sandpapered. After this another coat of Shellac Varnish is applied, both to the front and the back of the wood panel. Three hours after that, it can again be lightly sandpapered, and then it is ready for painting. The sandpaper is essential because it roughens the surface and forms a bond between the pigment and the wood. If you paint on a highly polished surface, whether it be glass, metal, wood or canvas, there is very little bond between two glossy coats, and the chances of peeling are very great; but, if you roughen the surface upon which you

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are going to paint, there is a contact between the paint and the surface, due to the roughness just mentioned.

Shellac used in priming wood is essential, in order to prevent the resinous matter from evaporating into the painting. But, if a painting should crack, which has been based on Shellac, and a restorer applied alcohol, it is quite obvious that the painting would become badly damaged.

PAINTING ON METAL

ANY metal which has rigidity, such as Copper, Zinc and Aluminum, is good to paint on and is absolutely permanent. Aluminum is the lightest of all the metals and not very expensive. It is readily purchased in any size up to 30" x 36" and in any reasonable thickness. The bodies of nearly all good automobiles are made of Aluminum, and when the surface is properly prepared, it holds the paint perfectly and permanently. It can be bought with a so-called egg-shell finish, but it is always advisable, before painting, to rub it very thoroughly with coarse sand-paper or emery cloth. This produces very fine ridges, which hold the paint, and that is the only preparation that Aluminum needs for permanent painting. Copper, Brass, Tin-

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Plate and Zinc must all be prepared in the same manner by rubbing them very thoroughly with coarse sandpaper or emery cloth, and no further preparation is necessary.

OILS AND MEDIUMS

THREE are on sale a very large number of Mediums for use in oil painting, some of which are essential, but most of which are unnecessary; and, for certain purposes, unreliable. The materials generally on sale — and this is not a complete list — are:

- Poppy Oil.
- Linseed Oil.
- Walnut Oil.
- Nut Oil.
- Pale Drying Oil.
- Dark Drying Oil.
- Spirits of Turpentine.
- Petroleum Naphtha.
- Amber Varnish.
- Copal Varnish.

Japan Oil Size.

Mastic Varnish.

Megilp Varnish.

Damar Varnish.

and other materials, the compositions of many of which are kept a secret and are sold under proprietary names. As a matter of fact, the painter can get along perfectly, and will have permanent results, if he sticks to Raw Linseed Oil, Turpentine and one Varnish, either Mastic or Damar. I do not mean to say that a Medium like Copal Varnish mixed with certain colors is not a good Medium, for such a material will produce enamel paints which will have a permanent gloss, but when you come to consider that the Old Masters had only from seven to ten pigments ground in a drying oil like Linseed Oil, and the most of their paintings are to-day a complete example of permanence, there should be no reason why

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the mind of the painter should be clouded with a multiplicity of materials and why many materials should be used which may in time prove detrimental.

Without going into any scientific dissertation on the subject, if you take a strong drier and mix it with many pigments like Umber, Zinc and the Siennas, you will have, apparently, a perfectly dry picture in twelve hours, but you must bear in mind that the drying process, once started with these powerful driers, goes on sometimes for years, until finally the paint disintegrates, because too much drier has been used. It is, of course, often-times essential to use plenty of drier, or to use Copal Varnish as a Medium, in order to finish the work so that it can be handled with safety for illustrative uses, but where a painter has a commission to paint a portrait, it is far wiser to use the simple palette and to reduce only

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with Turpentine and Raw Linseed Oil and let the sun and air dry his picture slowly, normally and naturally.

VARNISHES

No picture should be varnished before it is at least six months old, for I have already stated that the process of drying with Linseed Oil Colors is progressive, and keeps on for years, and if a picture be varnished too soon, cracks are bound to result. Only those types of varnishes should be used which can be readily removed and the three types that can be readily removed are Sandarac, Mastic and Damar.

Sandarac is a varnish which dissolves in Alcohol and dries perfectly within three hours.

Mastic is a pale gum which dissolves only in Turpentine and dries hard and dust-free overnight.

Damar is similar in its characteristics to Mastic, but not quite as hard.

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Pictures with a heavy impasto, and particularly those in which the slow drying pigments are used, should not be varnished inside of a year — or, preferably, in two or three years. All Linseed Oil and Poppy Oil paints dry from the surface down and wrinkle like a dessicated apple. If a curved needle is inserted into these wrinkles, it is very often found that the interior is still liquid or semi-liquid. I have found globules of graphite and lamp black mixed with Linseed Oil, to remain soft after many years. When a picture becomes thoroughly hard and it has dried completely, the film becomes as tough as a sheet of glue, and it cannot be punctured. It is then called "needle-proof." A clot of Raw Sienna in a picture by Josef Israels ten years old was not yet "needle-proof."

It would therefore appear that the best time to varnish a picture is after it has hardened up

uniformly and completely, even though this takes a year or two.

Mastic is very largely used, but has the one great defect that you never know whether it is going to dry with a gloss or whether it is going to dry flat, and sometimes a picture varnished with Mastic will be partially glossy and partly matte. To overcome this, a small amount, not exceeding 10%, of Lavender Oil or Linseed Oil may be added.

On a bright, clear day, Damar Varnish usually dries with a gloss, but on a damp day, when the picture is moist, Damar will also dry flat.

Sandarac Varnish may be very easily removed with Alcohol, and both Damar and Mastic may be easily removed with Turpentine or a mixture of Turpentine and Benzine (Petroleum Naphtha).

For the restoration and renovation of paint-

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ings, it will at once be seen that a varnish that can be easily removed is by far preferable to the Copal Oil Varnishes, and Amber Varnishes which dry with a hard, tough insoluble film, and it is at times impossible to remove these; and, where strong solvents or much attrition is used, it sometimes happens that the surface glazing or delicate tints are removed at the same time.

The pigments that are only permanent when used alone and remain permanent after having been varnished, are:

Flake White.

Chrome Green.*

Chrome Yellow.

Prussian Blue.

Emerald Green.

Naples Yellow.

* *Chrome Green* must not be confounded with the *Chromium Greens*, but is a mixture of *Chrome Yellow* and *Prussian Blue*.

Chrome Red.

Verdigris.

Harrison Red.*

It is pertinent to say a word about Flake White, because practically all of the Whites used by the Flemish, Dutch, Italian and English Masters was Flake White, and there is no white pigment that is equal to it in what is known as hiding power. Two coats of Flake White thinly applied are equal to four coats of Zinc White in hiding power, so it is quite appropriate that where a painter wants a permanent White, which shall have a solid body and hiding power, there is absolutely no objection to using Flake White, provided it be coated over with Zinc White after it is perfectly dry. Or, if Flake White can be kept

* *Harrison Red* is a coal tar color similar in shade to *English Vermilion*, but ten times stronger, and is best used as a glaze, or as a solid pigment by itself.

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free from noxious gases, after it is applied, and then cleaned off with pure Spirits of Turpentine and varnished, with either Mastic or Damar, it is even permanent against noxious gases, because these varnishes prevent gases from attacking Flake White. The same may be said of Chrome Green, Prussian Blue and Chrome Yellow, which are all likely to be affected by sulphur gases, and should these turn Yellow or Brown, they can be cleaned and restored to their pristine condition, if washed with a weak solution of soap and water and afterwards lightly rubbed with ordinary Peroxide of Hydrogen. The effect of the use of Peroxide of Hydrogen and soap water is to oxidize the color which has been affected by sulphur gases. I am not giving any special formula for this work, because each case must be separately treated, and the painter must work out the case for himself. The Chrome

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Yellows and Chrome Greens are exceedingly permanent to light when used alone and properly varnished. Prussian Blue has so many beautiful characteristics as a pigment and is so permanent to light that if used alone, or even when used with Zinc White to produce a sky blue, it has considerable merit. Gainsborough was probably the first great painter to use Prussian Blue, and I have seen some of his paintings in which the drapery and dresses were a beautiful green, which was due to the yellowing of the varnish, which, when mingled with the Blue, produced Green; and I have also seen the varnish removed and then the Blue came back with all its original intensity.

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BEESWAX AND OTHER WAXES

WAX of any kind, as a painting medium, should not be used under any circumstances. In order to produce Matte effects, there are on sale reliable varnishes which dry perfectly flat and which contain no wax of any kind, but which are made of Copal, Damar or Mastic, and to which about ten per cent. of a material known as Palmitate of Aluminum, or Stearate of Aluminum, has been added. These two materials are known as flattening materials and do not remelt after they are dissolved in Varnish.

I recall a very excellent Dutch painting in which beeswax had been used as a Medium and which was brought over to America and placed in the house of a collector. The following Summer was one of the hottest Summers which

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New York had ever experienced, and on re-opening the house in the Fall, the eyes in the portrait of this picture had melted and run down over the cheeks.

One often hears the remark that the Egyptian portraits painted in the First and Second Centuries and done with wax are still as perfect as the day they were painted. I have examined some of these paintings and find that they were not done with wax at all, but done with a hard resin of a high melting point.

So every painter who wants to paint permanent pictures should stick strictly to simple vehicles and pigments and not have anything to do with wax whatever.

SUMMARY

A FEW simple rules, together with the simple Palette would insure paintings that are absolutely permanent. Haste in finishing a picture often produces bad results. It is said of the great French artist Henner that he often had as many as forty or fifty pictures in his studio in the process of painting. He would lay in the foundation and then place the picture face to the wall to dry. It was weeks before he got back to the first picture again, when he would start outlining the figures. It was weeks again before he came back to the beginning and finished his pictures—in the meantime, of course, each succeeding coat having had time to dry through and through. And this, more than anything else, is the principal reason why his paintings are in such perfect condition to-day. I cite him as a man who

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had the instinct to paint with simple colors; and, although he was a prolific user of Madder Lake, he always used it as a glaze over the ordinary ground. Most of his smaller pictures were painted on Academy-Board or Composition-Board, and I have no doubt that his pictures will retain their pristine condition for centuries.

On the other hand, we have such a great painter as Josef Israels, who paid little or no attention to the materials which he used, with the result that many of his pictures are badly cracked and have darkened considerably in the shadows.

Once a painter is familiar with the colors which are permanent, he or she can proceed unconsciously without any technical interference and produce results which will stay.

There is a decided inclination at the present time towards impasto painting, in which

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colors are piled up to the thickness sometimes of a centimeter, and a plastic effect is sought by this means. This is a dangerous proceeding, excepting in the hands of one who has a distinct knowledge of how colors dry. Lamp Black and Graphite, for instance, will take many years to dry thoroughly hard. Zinc White, Raw Umber, Burnt Umber, Sienna, Indian Red and Red Lead or Orange Mineral will dry hard and brittle, with the ultimate danger of falling off the canvass. Then again, the pigments I have just mentioned, like Lamp Black, and which take years to harden, will crack any hard drying pigment which is placed over them, because in drying, the slow drying colors wrinkle and contract, and a hard drying color placed over them, not having sufficient elasticity will be torn asunder, and a small crack, which may widen into a fissure, will take place. The whole idea of permanent painting, then,

simmers itself down to one of sense and judgment. No one has ever seen a Water Color painting which is cracked. This is due entirely to the fact that the pigment is so thin that it cannot crack. Linseed Oil, when exposed to the air for several years, changes into what is known as fat oil. This is a thick, ropey, pale material of the consistency of honey, and when used too freely dries with a film similar to that of a withered apple. Placed in a warm place, instead of baking, it shrivels up and wrinkles.

Blakelock and Ryder poured thick coats of varnish over their pictures when the paint was insufficiently dry, with the result that many of their paintings to-day show cracks and fissures, due to this practice. Blakelock used a very heavy-bodied Linseed Oil, which was so viscous that it flowed down in many places and formed "curtains," and teardrops.

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Blakelock painted with fat oil, and many of his pictures show this wrinkling effect, and as no varnish is added to fat oil, the chances are it will remain absolutely permanent, if used thinly or sparingly.

MADDER LAKE AND HARRISON RED

BOTH of these colors are aniline colors and therefore artificial. There is some Madder Lake on the market which is made from the Madder Root but it does not differ from the artificial in the slightest degree and both the natural and the artificial are absolutely permanent under normal conditions. The artificial is sometimes sold under the name alizarine.

Madder Lake is transparent when used as a glaze and it can be mixed with a number of pigments with which it does not interact, but it must not be mixed with the iron pigments that contain water, and these are principally all the Ochres and Siennas, but as a glaze it may go over any color without being decomposed. It has a record for permanency of several hundred

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years and is at least of essential importance in portrait painting.

Harrison Red is rather a complex aniline color, exceedingly brilliant, but it has some defects which the painter should know. In the first place it bleeds very slightly, that is to say, if Zinc White or Flake White is painted over pure Harrison Red, the Zinc or Flake will turn a pinkish brown, which is due to the fact that the linseed oil, or other drying oil will absorb part of the dye out of Harrison Red. The painter, therefore, in using Harrison Red must be careful of this defect. Harrison Red must not be mixed with an iron color like Ochre, Sienna, or Raw Umber, otherwise its brilliancy is slightly marred. It is similar in many respects to Deep Vermilion, excepting that it is many times stronger than Vermilion. It can be reduced with Permanent White (*Blanc Fixe*) without materially lessening its brilliancy.

LAKES TO BE AVOIDED

IT seems a great pity that colors like Carmine, Scarlet Lake, Geranium Lake, and dozens of other brilliant lakes of that type, should be sold to painters. The three that I have mentioned will disappear when exposed to the summer sunlight for three or four months, and the painter who says he cannot get along without Carmine is simply painting for the present and losing sight of the future.

In closing this chapter I must express the thought that the time is not far off when every tube color will be labelled as to its composition and as to its permanency for without such a guide, the painter is liable to make serious failures.

PAINTING THE NEXT DAY

MANY painters find that in taking up partly painted canvases and attempting to continue their work, that fresh paint does not adhere to the paint recently applied. This defect is well recognized among house painters and piano and cabinet varnishers, and therefore it becomes necessary to roughen the surface, so that the new coat of paint will adhere. There are some mediums on the market for this purpose, but with a little care no medium is needed other than pure water; and I have heard the statement that by rubbing the surface of a painting with a stiff brush that has been dipped in water and allowing that surface to dry thoroughly, new paint will take over the old as if by magic. There is no magic in it whatever. All that happens is that there is so much dust and foreign matter in the air that it

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settles on every surface to a considerable extent within twenty-four hours. When this is mixed with water, the dust acts as an abrasive, and consequently the surface is scarified minutely and the pigment takes hold. The only care necessary to exercise is that when using plain water on any painting sufficient time must be given so that it dries out thoroughly, before new paint is applied.

TRUE NAPLES YELLOW

MANY Artists feel that they get results with True Naples Yellow that they cannot get with anything else. There are a variety of shades of Naples Yellow on the market, running from a pale straw color to rather a deep Ochre; but, the True Naples Yellow, such as Rembrandt used on the cloak in the painting of Homer, now hanging in the Mauritshuis, has all the freshness to-day that it evidently had when it was painted. The dark outlines of this cloak are painted with Ochre, which, of course, is a permanent color.

I could cite many examples of prominent painters who felt that Naples Yellow was essential to their palette. Their is a picture in the Frick Collection by Turner—a view of the harbor of Dieppe; a full sun is standing high in the skies. The upper half of the sun painted

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with light Naples Yellow has been smoothed out with a steel knife, and this particular part is Gray, whereas the lower half is a light yellowish White, where it evidently had not been touched by the knife.

Naples Yellow imitation, which is made by mixing Litharge, pale Cadmium and White, also shows a black or very dark streak when touched with a steel knife. It is, therefore, best to avoid any steel coming in contact with this pigment.

By itself, genuine Naples Yellow is exceedingly permanent to light, and when used alone and varnished, is not affected by gases of any kind. As evidence of this, it is practically unchanged in all old paintings, with the exception of, perhaps, the Seventeenth Century pictures, and older productions show a slight deepening, which may have been caused by the action of gases where the pigment was unprotected. In

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Constable's pictures of his later periods, he evidently used Naples Yellow unmixed, and apparently put it on with the aid of a knife. These pictures of Constable's only show a very slight deepening.

NEW WHITES

WITHIN the past year White Pigments have made their appearance upon the market which bid fair to replace both Zinc and Lead Whites. All these new whites, which appear to be precipitated mixtures of Permanent White (Blanc Fixe) and Titanium,* have nearly double the hiding power of Flake White, but what is of greater importance is that they are not affected by any ordinary chemicals and gases and are light-proof and sulphur-proof.

From the experiments made by the author it would appear that a White of this nature is absolutely safe to use, can be mixed with any other pigment without interaction, and while it dries slowly it does not dry with the brittleness of Zinc although when Zinc White is mixed

* Sold under the name of Permalba, Toxitan, etc.

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with a heavy bodied Linseed Oil it does not become brittle.

Another new White is Lithopone, which is a Zinc Barium compound that was discovered about twenty-five years ago. When this white was first exploited prophecies were made that it would soon replace Flake White, White Lead, and Zinc White, and that it was the most remarkable White that could possibly be made. As a matter of fact it has never replaced anything because it has a pernicious habit of turning dark in the bright sunlight and turning white again in the dark, but within the last few years light-proof Lithopone has been manufactured and its principal use is for foundation whites and for interior flat wall decoration. It is a pigment that should never be used for landscape or portrait painting but may very safely be used for ground work.

AMBER VARNISH

MANY painters believe that, owing to the fact that Amber is the hardest resin there is, the varnish made from it should retain its gloss the longest, and be just as free from cracking and bloom as the natural resin itself.

An examination of several of the amber varnishes on the market reveals the fact that there probably is no such varnish made. Although Amber can be fused and melted, it takes such a high heat that even the lightest gum Amber becomes exceedingly dark and then it must be diluted with so much oil that there is very little gum Amber in the varnish itself. Most of the Amber Varnishes on the market are Copal Varnishes that contain little or no Amber at all.

It is very wise for the painter to keep away from materials of this type; and, if a hard dry-

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ing varnish is desired, any good Copal Varnish will answer the purpose, although for varnishing pictures, it must be continually borne in mind that a simple varnish like Damar, Mastic or Sandarac should be used; for only those simple varnishes can be easily removed without destroying the painting itself.

BLOOM

IT is not the intention of the author to go into any dissertation of the cause of bloom; for every varnish blooms more or less. In fact, all polished surfaces, whether they are varnished or not, show condensation, and surface deposits which are the equivalent of bloom.

Take for example, a mirror in your home; or a window glass; or a varnished piece of furniture. Unless these are continually wiped clean they will show a surface deposit, which is one type of bloom.

In paintings, bloom is the result of a variety of causes. Sometimes it is due to moisture which deposits. At other times it is due to the action of sulphur gases on the chemical compounds in varnish; and one of the most general causes is a surface deposit to which dust

and foreign matter adheres. Some varnishes, like Mastic, bloom notoriously; and, if Mastic is to be used, it always should be mixed with ten per cent. of Spike Oil and five per cent. of heavy bodied Linseed Oil. This, in a large measure, prevents the flatting and blooming of Mastic Varnish.

Damar Varnish, at times, shows the same defect, but not to such a great extent as Mastic, and Sandarac, the latter being an alcohol soluble varnish, which shows it least of all, has the defect of cracking very readily, particularly a year after it is applied.

Bloom can be removed in many ways: *First*, by gently rubbing with a silk handkerchief, which removes the surface deposit and polishes the underlying film of varnish; *second*, by taking heavy bodied Linseed Oil, diluting with half Turpentine, and applying that with gentle rubbing, which at once polishes

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the surface and removes superficial adherent bodies; *third*, by the use of any good, thin machine oil, such as is sold in this country under the name of “3 In 1.” A few drops of this may be applied on a linen handkerchief and gently rubbed, but then it must be wiped completely clean, because it is a non-drying oil, and dust and dirt stick to it with greater ease than they do to a drying oil.

Bloom also occurs in damp atmospheres, even on a painting which is not varnished. This is due to a certain physical — chemical cause, in which even dried Linseed Oil will absorb a certain amount of moisture. To overcome this, the painting should be placed in the warm sun, wiped clean, and then revarnished with a very thin varnish of either Mastic or Damar.

REPAINTING

MANY painters and restorers are uncertain as to what materials to use for retouching and repainting. Some use Tempera colors; and, after they are dry, they varnish the entire picture, and the results are usually very good. With this exception, the Tempera colors do not change, whereas the surrounding oil painting yellows and darkens in undue proportion to the new color applied.

The best method to pursue is to use dry pigments, which should be rubbed, or mulled on a glass plate with a muller, and mixed with dilute Damar Varnish. The chances are that a mixture of this type will dry in fifteen or twenty minutes, and the color can be matched up with the surrounding painting very exactly.

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In filling up cracks, flakes and holes in paintings, this method is really the best, because it insures matching, quick drying and very little decomposition.

RESTORATION AND CLEANING OF PAINTINGS

THE greatest possible care in the selection of a cleansing material must be exercised, and it is always wise to take the painting out of the frame and try the effects of various mediums in one corner, in order to determine whether it is safe to clean the painting or not.

The first requisite is to wipe off the painting with a rag that has been soaked in boiling water and then wrung out, in order to remove superficial adherent dust and dirt. If the painting is cracked, it is necessary to be exceedingly careful not to let any moisture get through the cracks, for it might soften up the glue underneath, in which case, large flakes may possibly curl from the canvas. After having cleansed the surface with water or, if necessary, with

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any good neutral soap water, such as Ivory Soap, Fairy Soap; or, better still, any shaving soap, an experiment should be made in a corner of the painting, to see if it has been executed with a drying oil, like Linseed Oil, or Poppy Oil.

The great danger in the cleaning of paintings lies in the fact that if a painter has used varnish as a medium mixed with his tube colors, nearly all solvents will attack such a painting, and the greatest trouble will result, because the paint itself will come off the surface. So, after having established — let us say, for instance — that the painting is a Linseed Oil painting, the following methods are perfectly safe:

Mixtures of equal parts of No. 1 Denatured Alcohol, Turpentine and Water, thoroughly shaken up, may now be applied with a very stiff bristle brush. This will remove the varnish without disturbing the film underneath.

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Another good method to use is to take a soft tooth brush, dip it in Turpentine and gently rub the surface; and, if the varnish is of the single solvent type, like Mastic or Damar, it will come off perfectly clean without dissolving the Linoxin (dry Linseed Oil film).

The latest method is the use of Isopropyl alcohol, known commercially as Petrohol, which will dissolve most of the varnishes without dissolving the dry Linseed Oil film. Isopropyl alcohol can be diluted with Turpentine, Benzine or Kerosene, and when so diluted, can be copiously used.

The other method to be recommended is the use of a material called Cumene, or Cumol, which has the great advantage of dissolving varnishes without dissolving the Linoxin, provided, of course, it is used with a little common sense. It must be understood that the surface of the painting is a very delicate film, and in

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the restoration of a painting all that is necessary is to dissolve the superficial layer of old yellowed varnish and adherent dirt, and nothing else.

The author has made a series of modifications of Cumene, such as one third Cumene, one third Kerosene and one third Denatured Alcohol, which has the advantage of slowing down the action to such an extent that in case there is the slightest indication of decompositon of the painting itself, the solvent can be wiped off with a dry cloth or a cloth soaked in Kerosene, and the dissolving action will be stopped immediately.

The foregoing description is just the introduction to the various methods employed, and is *not* intended for novices or those unskilled in the art. At all events, great care must be exercised.

The author superintended the cleansing and

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restoration of fifteen paintings, some of them very large in size, which had not been cleaned or restored in many years, and some of these were in shockingly bad conditon.

The Isopropyl Alcohol and Turpentine methods were employed without the slightest defect, and the varnish in every case came off perfectly clean, and when the pictures were revarnished, they were restored to their pristine condition. If it is desirable to give the picture a patine of age after it has been renovated, it is not a very difficult thing to do, if a slight tinge of a permanent Brown or Yellow Lake is added to the varnish; but, under no circumstances, must any bituminous or asphaltic compound be used for this purpose.

FRAMING

OUR tastes change with our culture. After the Civil War, when the first large crop of millionaires was made, all ornamentation, whether in picture frames, furniture or wall decorations, assumed a garish and bizarre effect. Gold and brilliant colors were used liberally, and to this day, many pictures are so badly framed that the effect of the picture itself is lost.

Many painters have only one exhibition frame, in which they show their paintings to prospective buyers and others, and some painters will not sell a painting without a frame, believing that they know best the kind of a frame best suited for the painting. We are rapidly changing our views on this subject, fortunately, and we are going back to what the Dutch and Flemish did three centuries ago, of

having dark frames with a little gold or silver insert. It must be obvious to everyone that a somber painting in a six or eight inch glaringly brilliant yellow gold frame, destroys the value of the painting, for the eye, at all times, lights on the brilliant frame first.

The best example of this is the method in which etchings are framed. You seldom see an etching in anything but a half or three quarter inch flat, dark frame. If an etching were placed in a three inch gold frame, both would be out of place. Frames should always be subordinated to the painting. A blue and white seascape should be framed in a bluish gray frame, which may have a dark bronze moulding on the outer and inner edge. If painters want only one frame to show their work, let that one frame be of somber hue; otherwise it will detract from the painting.

Proper framing is really a scientific study.

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If the general tone of a picture be yellow, like a golden sunset, the complementary color would be a bluish green, and therefore a bluish green, with some gray in it, offset by a narrow metal colored moulding, would be the proper frame for a painting of that kind. Nothing is so hideous as brilliant gold on all the paintings in a room, and many a museum is spoiled through the glossy, inharmonious effects of the conglomerate masses of frames, which detract from the color value of a painting. A little care and study on this subject will frequently enhance the work in question.



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